

Remarks

The non-final Office Action dated April 11, 2008 has been reviewed and the following remarks are made in response thereto. The Examiner has indicated that Applicants previously filed response of July 11, 2008, would not be entered. Applicants therefore present herein amendments to the claims that were last entered by the Examiner.

Applicants wish to thank Examiner Kallis for the phone conferences of October 1, 2008 and October 14, 2008. During these conferences, Examiner Kallis discussed with Applicants' agent potential amendments to overcome the cited art. In view of these discussions, Applicants have amended the claims to reflect the subject matter indicated by Examiner Kallis as allowable.

In view of the following remarks, Applicants respectfully request reconsideration of this application and timely allowance of the pending claims. Written support for the claim amendments is found throughout the specification and in the original claims. Representative support for the amendments to the claims can be found page 3, lines 18-24 and at page 6, lines 26-33. Applicants submit that no new matter has been added.

Rejection under 35 U.S.C. § 102(e)

Claims 1, 2, 22-25, 28-31 and 34-39 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent 7,038,113 ("Dixon").

The Office Action alleges that Dixon discloses daidzein produced in plants transformed with isoflavone synthase, chalcone synthase, and chalcone reductase.

Without acquiescing to the merits of the Examiner's rejection and solely to expedite prosecution, Applicants have amended the claims to further define the claimed invention. The amended claims provide for amino acid sequences of the claimed chalcone reductase with at least 95% identity to SEQ ID NO: 2, and isoflavone synthase with at least 95% identity to SEQ ID NO: 4 in a plant or part thereof that does not naturally produce isoflavones and is active in both flavonol and anthocyanin biosynthesis.

As the specification details, others have tried to produce daidzein in plants, but were only able to demonstrate low levels of production. The selection of plants that have both flavonol and anthocyanin activity though surprisingly results in markedly improved daidzein production when isoflavanone is introduced. Isoflavonoid production is limited primarily to leguminous plants. (*See, e.g., Liu et al. PNAS* 99: 14578-14583, 2002, attached hereto). While flavanol and anthocyanin may both be derivatives of 1,3 diphenylpropane flavinoid, Dixon does not disclose plants that actively produce both derivatives.

Production of flavonol and anthocyanin involves differing enzymatic pathways. (See, e.g., Zabala *et al.* BMC Plant Biology 6: 26, 2006; Verhoeven *et al.* J. Exp. Bot. 53: 2099-2106, 2002, both attached hereto). Dixon does not disclose selection of a plant wherein the biochemical pathways for the synthesis of both flavonol and anthocyanin are active. In fact, the working examples of Dixon illustrate only flavanol derivatives in untransformed *Arabidopsis thaliana*, and flavanone derivatives in untransformed tomato plants. In the Advisory Action, the Examiner cites that Applicants utilized tobacco as a plant that is active in both anthocyanin and flavonol production. Dixon, however, does not disclose transforming tobacco plants. Accordingly, Dixon does not disclose selecting for both flavonol and anthocyanin activities in a plant.

Furthermore, Dixon does not disclose a plant expressing proteins with at least 95% identity to SEQ ID NO: 2 and SEQ ID NO: 4. Dixon fails to disclose a plant that comprises one or more nucleotide sequences encoding a chalcone reductase of the amino acid of SEQ ID NO: 2 and one or more nucleotide sequences encoding an isoflavone synthase comprising the amino acid sequence of SEQ ID NO: 4. Dixon also fails to disclose also expressing in the genetically modified plant or part thereof nucleotide sequences encoding a chalcone isomerase with at least 95% identity to the amino acid sequence of SEQ ID NO: 6.

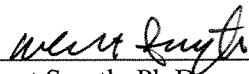
Moreover, Dixon fails to disclose the claimed genetically modified plant or part thereof, wherein one or more nucleotide sequences encoding a chalcone reductase comprise SEQ ID NO: 1, one or more nucleotide sequences encoding an isoflavone synthase comprise SEQ ID NO: 3, and wherein one or more nucleotide sequences encoding a chalcone isomerase comprise SEQ ID NO: 5. For at least these reasons, Applicants respectfully request that the rejection be withdrawn because the reference fails to disclose each and every feature of the claimed invention.

Conclusion

Except for issues payable under 37 C.F.R. 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **constructive petition for extension of time** in accordance with 37 C.F.R. 1.136(a)(3).

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Respectfully submitted
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